

EXHIBIT - 11

ANALYSIS OF THE MATERIAL CIRCUMSTANCES OF 17 WASHINGTON TRIBES

**A Report to:
Evergreen Legal Services**

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July 1, 1993

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I. Introduction.

1. Professional Qualifications

I reside at 2452 Buckleberry Road, #9, Davis, California. I am presently a consulting economist. I received a B.A. in economics from the University of British Columbia and an M.A. in Resource Economics from the University of California, Santa Barbara.

I have practiced as an economist since the late 1960's. In the 1970's I served as Chief Economist for the Canadian Department of Fisheries and Oceans in southern British Columbia, and then as Chief Social Science Advisor on habitat conservation in British Columbia and the Yukon Territory for the same entity. In those roles I had final responsibility for all social scientific work produced by economists, sociologists, behavioral psychologists and anthropologists who, at various times, served on my staff. I also was responsible for impact assessments affecting Indian tribes within my geographical areas of responsibility. I assimilated research results into single and multi-disciplinary documents, and regularly presented expert testimony respecting same, both sworn and unsworn.

In 1979-80 I served as Economic Policy Advisor to the U.S. Fish and Wildlife Service's "California Water Policy Center". This entity was designed to produce multi-disciplinary analyses by economic, biological, hydrologic and institutional experts with respect to water, fish and wildlife issues in the Pacific Region of the U.S. Fish and Wildlife Service.

Subsequently, as President of Meyer Resources, Inc., I have completed over 90 analyses relating to economics and natural

resources, primarily in Washington, Oregon, Idaho, California, Nevada and British Columbia. These tasks have involved periodic testimony with respect to results, to Courts, legislative and administrative hearings, and invited testimony to the National Academy of Science.

My work with tribes began with oversight of anthropological analysis on the Fraser River in 1973. My work with Washington tribes began in 1982. Since then I have completed: a 15 tribe study of historic and contemporary impacts on 14 "Statute of Limitations" rivers in Washington, Oregon and Idaho from loss of treaty fish stocks; an assessment of the historic and contemporary importance of salmon to five Columbia River tribes; and an assessment of present circumstances of 11 coastal tribes in Washington and one in Oregon, and of potential impacts upon these tribes from development of offshore oil and gas resources. I have also conducted analyses of tribal circumstances and impacts for the Muckleshoot Tribe, at White River and Coal Creek; for the Yakima Indian Nation at Rock Island Dam; for the Muckleshoot and Suquamish Tribes in Elliott Bay; and for the Lower Elwha Tribe at Elwha River and at Low Point. This work involved both economic analysis and assessment of related other-disciplinary and cultural information. Results were communicated via written report, and in some instances, via Court deposition and/or testimony. A Curriculum Vitae accompanies this report.

2. Focus of this Report

The principal purpose of this analysis is to compare, in aggregate, the present material circumstances of the 17 Washington tribes listed below, relative to (a) inhabitants of the state of Washington and (b) inhabitants of the United States. These 17 tribes will be referred to as The Tribes in this report.

Lower Elwha S'Klallam	Puyallup
Jamestown S'Klallam	Sauk Suiattle
Lummi	Suquamish
Makah	Swinomish
Muckleshoot	Skokomish
Nisqually	Squaxin Island
Nooksack	Stillaguamish
Port Gamble S'Klallam	Tulalip
Upper Skagit	

The analysis will also use available data to examine three other questions:

- What changes, if any, have occurred in these circumstances since the 1980 Census?
- What effect upon material circumstances of The Tribes would result from establishment of a right to 50% of the shellfish in Puget Sound and the Strait of Juan de Fuca easterly of Cape Flattery?
- How would the material circumstances of The Tribes differ if they were solely reliant on hunting and fishing activities, including a 50% share of shellfish?

II. Summary of Conclusions.

1. Thirty-three (33) percent of members of The Tribes live below the poverty level, approximately three times the rate for the general population of Washington and of the United States. Health circumstances of Native Americans living in Washington State are characterized in a 1992 report by the Washington State Department of Health as "very poor", and by a 1993 study by the American Indian Health Care Association as "in many ways, alarmingly poor". These findings, considered either jointly or severally, substantiate a conclusion that The Tribes do not presently enjoy even a minimally acceptable level of material living.
2. The 1990 Census reports per capita incomes of The Tribes at about \$7,000, less than half the per capita income enjoyed by residents of the state of Washington (\$14,923) and of the United States (\$14,920). The 1990 Census reports unemployment among the Tribes of over 16 percent, compared to Washington state unemployment of 5.7% and United States unemployment of 6.4%. Bureau of Indian Affairs data suggests that the Census may substantially underestimate tribal unemployment, and that unemployment for The Tribes may, in fact, exceed 50 percent. These data further substantiate the findings in (1) above, and indicate that The Tribes are nowhere close to enjoying the level of material living conditions of an average resident of either the State of Washington or of the United States.

3. By valuing Ceremonial and Subsistence (hereafter C&S) harvests of shellfish, other fish and game at price proxies for commercial sales, it is estimated that including these harvests as income adds \$71 to the \$7,000 per capita annual income of 16 of The Tribes. Even if reestimates were to double or triple this figure, it is clear that inclusion of C&S harvests in income calculations does not change the conclusions reached in (1) and (2).

4. Results on poverty, income and unemployment reported for The Tribes are from the 1990 Census. Considering economic activity levels in major sectors, it is estimated that per capita income for The Tribes may have increased by about \$672, subsequent to 1989/90. This would raise per capita income for The Tribes to approximately \$7,700, compared to \$14,000+ in the state of Washington and in the United States.

5. Circumstances for The Tribes appear to have changed only marginally between the 1980 Census and the 1990 Census. Based on income reported for 1979 and 1989, respectively, per capita income of The Tribes has increased by about \$450 in real terms - but percent of Tribal persons living below the poverty line is reported to have also increased (by 2 percent). On this basis, there seems no reason to amend the conclusion reached by the Washington State Office of Program Research in the late 1970's that: "it is a fact that Indians living in Washington today suffer from a standard of living far inferior to that of the state's non-Indian population".

6. If The Tribes were to succeed in establishing a right to 50 percent of the harvestable shellfish in Puget Sound and the Strait of Juan de Fuca easterly of Cape Flattery, this would add an estimated \$731 to their annual per capita income.

7. If The Tribes were required to rely solely on commercial and C&S harvests of shellfish, other fish and game (including the 50% shellfish harvest discussed in (6) above), their total annual per capita income would amount to an estimated \$2,145.

III. A Comparative Structure for Assessing Material Wellbeing

By material wellbeing, I refer to the degree of adequacy of food, clothing, shelter and other tangible goods and services that support tribal existence. Psychological wellbeing, while arguably dependent on some adequate degree of material wellbeing¹ is not the focus of this analysis. Material wellbeing may be measured in a number of ways - and analytical protocol provides no single selection criteria. This issue is further complicated if the circumstances of one culture (in this case The Tribes) are being evaluated by criteria primarily developed from within another culture or group of cultures (in this case, non-Indian citizens of Washington or the United States). Sue and Sue² describe adherence to single culturally insensitive techniques as cultural

¹ Bachtold, L.M., 1982. "Destruction of Indian Fisheries and Impacts on Indian Peoples", in The Historic and Economic Value of Salmon and Steelhead to Treaty Fisheries in 14 River Systems in Washington, Oregon and Idaho. Meyer-Zangri Associates, a report to the Bureau of Indian Affairs; Portland, pp. 17-33.

² D.W. Sue and D. Sue, Counseling the Culturally Different. John Wiley & Sons (New York: 1990).

encapsulation. Speaking of their own field of inter-cultural counseling, they note:

The term (cultural encapsulation) refers specifically to (a) the substitution of model stereotypes for the real world, (b) the disregarding of cultural variations in a dogmatic adherence to some universal notion of truth, and (c) the use of a technique-oriented definition of the counseling process.³

Given these concerns, I do not entrust measurement of the material circumstances of The Tribes to a single measurement standard, but consider data from four measurement areas: level of poverty, level of unemployment, level of income and level of physical health, each of which serves as an indicator of Tribal material circumstances. Such an indicator approach to assessing "standard of living" for Washington's tribes has been previously used by the State of Washington's Office of Program Research.

While the number of Washington's Indians may have increased in the past 100 or so years, it is a fact that the Indians living in Washington today suffer from a standard of living far inferior to that of the state's non-Indian population. Task Force reports prepared under the auspices of the Governor's Indian Advisory Council show that in terms of health care, life expectancy, educational level achieved, unemployment, alcoholism, suicides and a host of other indicators of standard of living, the state's Indian population lags far behind its non-Indian population.⁴

This multiple indicator procedure reduces risk of statistical or culturally based distortion that may be associated with sole reliance on a single measure.

³ Supra at 8-9.

⁴ Office of Program Research, The Legal Relationship Between Washington State and its Reservation-Based Indian Tribes. Washington House of Representatives (Olympia: 1977), p. 12.

IV. Sources of Data

Availability of information is a limiting factor for the analysis presented here. In following sections, I discuss available data sources for each measure of Tribal material circumstance, and indicate the data selection priorities I have applied. In developing these priorities, I placed greatest emphasis on data from Census 90 of the U.S. Bureau of Census, an objective information source with no interest in the present controversy. Where necessary, I supplement those data from other identified sources.

Data were sought for comparison of moderate living conditions for residents of Washington state, of the United States and for the 17 Tribes.

V. Present Material Circumstances of The Tribes

1. The Poverty Status Indicator

The U.S. Bureau of the Census supplies data from the 1990 Census with respect to the percentage of persons for whom poverty status has been determined who are below the poverty line.

Poverty statistics...are based on a definition developed by the Social Security Administration in 1964 and revised in 1969 and 1981 by interagency committees. This definition was established as the official definition of poverty for statistical use in all Executive departments by the Bureau of the Budget (in Circular No. A-46) and later by the Office of Management and Budget (in Statistical Directive No. 14).

The original poverty index provided a range of income cutoffs adjusted by such factors as family size, sex of family head, number of children under 18 years old, and farm-nonfarm residence. At the core of this definition of poverty was the economy food plan, the least costly of four nutritionally adequate food plans designed by the Department of Agriculture. It was determined from the Department of Agriculture's 1955 survey of food consumption that families of three or more

persons spent approximately one-third of their income on food; the poverty level for these families was therefore set at three times the cost of the economy food plan. For smaller families and persons living alone, the cost of the economy food plan was multiplied by factors that were slightly higher in order to compensate for the relatively larger fixed expenses of these smaller households. Annual revisions of these SSA poverty cutoffs were based on price changes of the items in the economy food budget.

As a result of the deliberations of a Federal Interagency Committee in 1969, the following two modifications to the original SSA definition of poverty were recommended: (1) that the SSA thresholds for nonfarm families be retained for the base year 1963, but that annual adjustments to the levels be based on changes in the Consumer Price Index (CPI) rather than on changes in the cost of food included in the economy food plan; and (2) that the farm thresholds be raised from 70 to 85 percent of the corresponding nonfarm levels. ...

In 1980, another interagency committee recommended three additional modifications that were implemented in the March 1982 CPS as well as the 1980 census: (1) elimination of separate thresholds for farm families, (2) averaging of thresholds for female-householder and "all other" families, and (3) extension of the poverty matrix to families with nine or more members. ...

The poverty thresholds rise each year by the same percentage as the annual average Consumer Price Index.⁵

The Bureau of the Census data considers the terms "below the poverty level" and "poor" to be interchangeable.⁶ Inclusive of considerations of income, food costs, other basic living costs, family size and age, the Bureau of the Census' statistic on "percentage below the poverty level" is the most reliable "stand alone" indicator of Tribal material circumstance available to this analysis. The base income year for this poverty statistic is 1989.

⁵ Bureau of the Census, Poverty in the United States: 1991. Current Population Reports Series P-60, No. 181, p. A-7.

⁶ Supra at vii.

Three further issues must be discussed with respect to the poverty indicator. First, the Bureau of the Census publishes data on poverty, income and employment under two differing Tribal definitions. The Bureau's publication 1990 CPH-5-49⁷ reports data for self-identified members of each Tribe living on-Reservation or on adjacent trust lands, inclusive of other Native Americans, Eskimos and Aleuts living on those lands. Subsequently, the Bureau publishes data for all self-reported members of each Tribe wherever they live, and not inclusive of other Native Americans, Eskimos or Aleuts. This later data series which includes members of the subject tribes only is clearly more appropriate for this analysis. These data from the 1990 Census for "all tribal members alone" have not been published to date. However, I have obtained a "special run" of these data with the Bureau of the Census, providing 1990 Census data on poverty, income and unemployment for the 17 Tribes. This "special run" data provides the basis for the poverty analysis presented here.

Second, the Bureau of Census 1990 sample size for one Tribe - Jamestown S'Klallam - is so small (21 in the all-U.S. sample) that accurate interpretation of resulting data is preempted. This does not cause a problem for my Census sample-based estimates of poverty, unemployment and per capita income for The Tribes. However, for my Tribal enrollment-based estimates of these parameters (following) I use Jamestown S'Klallam poverty and income

⁷ Bureau of the Census, 1990 Census of Population and Housing: Summary Social, Economic and Housing Characteristics; Washington. 1990 CPH-5-49.

information developed from a recent detailed Tribal survey⁸. Bureau of the Census sample sizes and other pertinent information from the Special Run for The Tribes are provided in Appendix A.

Third, simple aggregation of Census sample data on poverty for the 17 Tribes produces a direct estimate of poverty for The Tribes. However, this measure could be subject to a degree of statistical error, to the extent that sub-sample portions differ between Tribes as a fraction of each Tribe's population. I have therefore also calculated a poverty level for The Tribes weighting poverty figures for each Tribe by actual 1990 Tribal enrollment of that Tribe. The enrollment data is provided in Appendix B. Both my sample-based estimate and my Tribal enrollment-based estimate of poverty are presented in this report. It will be subsequently noted that this modification, and the one discussed in the previous paragraph, make little difference to results obtained.

Table 1 identifies the percent of persons in the 17 Tribes living below the poverty level, and contrasts this with the percent of persons living below the poverty level in Washington State and in the United States, respectively. As noted, estimates are based on 1989 income levels.

⁸ Vance, J. Memorandum to Philip Meyer. June 7, 1993.

Table 1

Comparative Poverty - The Tribes, Residents of Washington
and Residents of the United States

<u>Referent Group</u>	<u>Persons in Poverty</u> --in percent--
United States	13.1
Washington State	10.9
The Tribes - Census Sample Based	32.9
The Tribes - Enrollment Based	33.0

Sources: Bureau of the Census, Statistical Abstract of the United States, 1992. p. xiii.

: Bureau of the Census, 1990 Census of Population and Housing - Summary Social, Economic and Housing Characteristics - Washington. 1990 CPH-5-49.

: Bureau of the Census, Special Run from the 1990 Census for the 17 Tribes.

: Vance, J. Memorandum to Philip Meyer. Jamestown S'Klallam Tribe, June 7, 1993.

2. The Unemployment Indicator

The Bureau of Census "special run" also provided data on percentage of "all Tribal members" who were in the labour force, but unemployed in 1990 for the 17 Tribes. The Bureau of Indian Affairs provides separate estimates of Tribal unemployment⁹. These two estimates differ substantially, rendering confident determination of an actual unemployment estimate the most problematic indicator discussed in this report. As with the poverty indicator, the Census estimates are sample-based. Tribal officials believe that the national Census process tends to select completed questionnaires from those individuals who are most literate and are

⁹ Bureau of Indian Affairs, Indian Service Population and Labor Force Estimates. 1989 & 1991.

most comfortable with "paper work". For some Tribes, they believe that this may correlate with relatively higher income and with employment. The Census estimates refer to working "last week", and place no time requirements on designation as "employed"¹⁰. The BIA estimates represent actual reporting by the Tribes which designate employment status over a period of a month or more. However, the BIA document warns that accuracy likely varies from Tribe to Tribe. Both estimates consider persons 16 years and over. My judgement is that the Bureau of the Census data overestimates employment for any work designation greater than one week - but that the substantially higher BIA estimates could overstate unemployment for some Tribes. Both the BIA and the Bureau of the Census estimates of unemployment are presented in this report, save for Jamestown S'Klallam. Because of the small Census sample, only the BIA estimate is presented for that Tribe. The same Census sample-based and enrollment-based weighting procedures as for the poverty indicator are used to produce final unemployment estimates for The Tribes.

Table 2 identifies the percentage of persons 16 years and over who are in the labor force, but are unemployed. Bureau of Indian Affairs data are averages from measurements taken in 1989 and 1991. Bureau of the Census measurements are taken in 1990.

¹⁰ For example, a person who was involved in babysitting for a couple of hours, or who had a paper route, would be designated as "employed".

Table 2

Comparative Unemployment - The Tribes, Residents of
Washington and Residents of the United States

<u>Referent Group</u>	<u>Persons Unemployed</u> --in percent--
United States	6.4
Washington State	5.7
The Tribes - BIA/Enrollment Based	52.7
The Tribes - Census Sample Based	16.2
The Tribes - Census/Enrollment Based	16.5

Sources: Bureau of the Census, Statistical Abstract of the United States, 1992. p. xii.

- : Bureau of the Census, 1990 Census of Population and Housing - Summary Social, Economic and Housing Characteristics - Washington. 1990 CPH-5-49.
- : Bureau of the Census, Special Run from the 1990 Census for the 17 Tribes.
- : Bureau of Indian Affairs, Indian Service Population and Labor Force Estimates. Washington, D.C. 1989 and 1991.

3. The Income Indicator

The Bureau of Census "special run" also provided "all member" data on 1989 per capita income for The Tribes from the 1990 Census. These data were reported for persons 15 years old or over.

'Total income' is the algebraic sum of the amounts reported separately for wage or salary income; net nonfarm self-employment income; net farm self-employment income; interest, dividend, or net rental or royalty income; Social Security or railroad retirement income; public assistance or welfare income; retirement or disability income; and all other income."

" Bureau of the Census, 1990 CPH-5-49. Supra at B-15.

I will use these data in my analysis, save for the Jamestown S'Klallam. There, because of the small Census sample size for the Tribe, I depend on a detailed survey completed by the Tribe in my enrollment based calculations.^{12 13}

I believe the income indicator to be somewhat narrow for evaluation of living conditions, particularly where significant proportions of a population may be below or close to poverty levels. Nonetheless, income is a valid "in part" indicator of living circumstances, and is included in my indicator array on that basis. Again, the income indicator for The Tribes is calculated with respect to both Census sample-based and enrollment-based data.

Table 3 presents data on comparative per capita income for the United States, Washington state and The Tribes, based on 1989 income data from the 1990 Census.¹⁴

¹² Vance, J. Supra.

¹³ Several Tribes inform me that they believe Census income estimates by some of their Tribal fishermen represent gross income from fish sales slips, with associated fishing costs not netted out. I have no comprehensive basis to estimate the magnitude of such overestimate, and will use the Census income data as reported.

¹⁴ My enrollment-based Tribal income figure uses estimated income for the Jamestown S'Klallam Tribe calculated from data in a 1991 Tribal survey (Appendix C).

Table 3

Comparative Per Capita Income - The Tribes, Residents of
Washington State and Residents of the United States

<u>Referent Group</u>	<u>Per Capita Income</u> --in dollars--
United States	14,420
Washington State	14,923
The Tribes - Census Sample Based	6,914
The Tribes - Enrollment Based	7,169

Sources: Bureau of the Census, Statistical Abstract of the United States, 1992. p. xiii.

- : Bureau of the Census, 1990 Census of Population and Housing - Summary Social, Economic and Housing Characteristics - Washington. 1990 CPH-5-49.
- : Bureau of the Census, Special Run from the 1990 Census for the 17 Tribes.
- : Vance, J. Memorandum to Philip Meyer. Jamestown S'Klallam Tribe, June 7, 1993.

4. The Health Indicator

This section of the report will present results from two recent published analyses specific to the State of Washington, done by professionals in the health care field: a 1992 report on "People of Color" by the Washington State Department of Health¹⁵; and a 1993 report on American Indian health status by the American Indian Health Care Association.¹⁶ I have been unable to find a similar report comparing the health status of Washington Tribes to the

¹⁵ Washington State Department of Health, People of Color. Olympia: 1992.

¹⁶ American Indian Health Care Association, 1993. Northwest Area American Indian Health Status and Policy Assessment Project. Saint Paul, Minn.

United States as a whole. This comparative health status section will consequently compare Tribal circumstance to that of all Washington residents only.

The present health circumstances of Washington Tribes were summarized by the Washington Department of Health in 1992.

Currently, the health status of Native Americans is very poor, with high rates of mortality, infectious disease, and limitation of major activities due to chronic health problems.¹⁷

The same report identified that death rates are substantially higher for Native Americans through age 59 than for Washingtonians in general in the same age categories - and that only Native Americans 80 years and older exhibit lower death rates than the Washington population as a whole for both males and females.¹⁸ These data are displayed in Table 4.

¹⁷ Washington State Department of Health (1992), Supra at 51.

¹⁸ Supra at 61-64.

Table 4

<u>Comparison of Death Rates for Native Americans and All Washington Residents, by Age Class</u>			
<u>Age Class</u>	(1) <u>All Residents</u> -deaths per 100,000 population-	(2) <u>Native Americans</u> -deaths per 100,000 population-	(1) as Percent of (2) -in percent-
Infant :Male	10.0	23.5	235.0
:Female	7.6	15.7	206.6
1-12 :Male	34.3	46.2	134.7
:Female	22.1	43.9	198.6
13-19 :Male	109.9	147.7	134.4
:Female	44.2	90.7	205.2
20-39 :Male	168.2	361.0	214.6
:Female	62.0	176.5	284.7
40-59 :Male	464.1	653.4	140.8
:Female	290.4	433.6	149.3
60-79 :Male	3,164.7	2,630.4	83.1
:Female	1,952.7	2,065.6	105.8
80+ :Male	12,142.5	10,476.2	86.3
:Female	9,465.2	8,184.1	86.5

Notes: All data are for 1986-90, save for "all residents" 1-12, 13-19, 60-79 and 80+ age classes which report 1980 data only.

: "Infant" data reports deaths per thousand live births.

Source: Washington Department of Health, 1992. People of Colour.

These conclusions are generally supported by a 1993 analysis of American Indian health status in the State of Washington by the American Indian Health Care Association. That publication provides a similar age specific mortality profile¹⁹, and based on 1987 data, reports that the average Native American dying prior to age 65, loses 7.6 years more of his life than a male in the general

¹⁹ American Indian Health Care Association, 1993. Supra at 46.

Washington population. Similarly, a Native American female dying prematurely (prior to age 65) loses 6.1 more years of life than her counterpart in the general Washington population.²⁰ This study concludes:

The health status of Washington's American Indians can be illustrated by birth characteristics, disease prevalence and mortality. The findings on all of these factors form a picture of American Indian health that is, in many ways, alarmingly poor.

Both the studies cited here identify poverty as a causal factor with respect to the unsatisfactory level of health of American Indians living in Washington State.²¹ This linkage between level of material living circumstances and health has also been specified by Bachtold in previous work specific to tribes in Washington, Oregon and Idaho.²²

5. Indicators of Material Wellbeing of The Tribes - A Summary

Examination of indicator data for The Tribes with respect to poverty, unemployment, per capita income and health yield a uniform conclusion. More than 30 percent of members of the 17 Tribes live below the Poverty Level, approximately three times the rate for the general population of Washington and the United States. This finding, and the evidence of adverse health conditions noted in Section 4, considered individually or jointly, substantiates a

²⁰ Supra at 47.

²¹ Washington State Department of Health, 1992. Supra at 4; American Indian Health Care Association, 1993. Supra at ix-x, 22-23, 54.

²² Bachtold, L.M., 1982. See Note (1).

conclusion that The Tribes do not presently enjoy even a minimally acceptable level of material living.

Additionally, The Tribes' rate of unemployment stands at between 2.5 times and approximately 9 times the rate for the general populations in Washington and the United States, depending on the statistical source referenced. The per capita income of The Tribes' members is approximately half of that of the average for Washington and United States residents.

In conclusion, the four indicators show that The Tribes are nowhere close to enjoying the level of material living conditions enjoyed by an average resident of either the State of Washington or of the United States.

VI. The Effect of Ceremonial and Subsistence Harvests of Shellfish, Other Fish and Game on Tribal Living Conditions

In this section I examine the potential mitigative effect on Tribal impoverishment from Ceremonial and Subsistence (hereafter C&S) harvest of shellfish, other fish and game. These resources provide a survival food resource and are of cultural and religious importance for many Tribal peoples²³. For these reasons, Tribes are reluctant to associate C&S resources with monetary measures.

At the same time, economic theory could view such resources as substitutes for food that Tribal peoples would otherwise have to buy, or, in an unrestricted market economy, goods that could

²³ Central Washington University, Potential Effects of OCS Oil and Gas Exploration and Development on Pacific Northwest Indian Tribes: Final Technical Report. U.S. Minerals Management Service OCS Study MMS 91-0056. (Ellensburg: 1991), p. iii.

potentially be sold for money income. It would then follow, from the economist's perspective, that such harvests are a legitimate addition to income. For persons living below the poverty line, as a substantial portion of Tribal members do, this economic perspective may fit poorly - as their choice may sometimes be between eating subsistence fish, shellfish or game, or making do with less food. Nonetheless, in this section, I estimate equivalent dollar income associated with C&S harvests by The Tribes from such a theoretical economic perspective.

The calculating procedure used here estimates economic values associated with C&S harvests as the product of volume harvested and the harvest price that could have been obtained, per unit of volume for major species, had these resources been sold. In keeping with the 1989 base year for my prior income analysis, I used volumes and prices for 1989.

I received estimates of C&S harvest of salmon from 14 of the 17 Tribes. I estimated C&S harvests of salmon for two other Tribes (Nooksack and Swinomish) as a percent of commercial catch - using percentages from adjacent Tribes. I received estimates of C&S shellfish harvest from 12 Tribes. Three other Tribes (Muckleshoot, Nisqually and Squaxin Island) indicated either that their shellfish C&S harvest was relatively small and uncounted, or that they had been driven from their traditional shellfish harvesting areas, or both. I received estimates of C&S harvests of deer and elk from 16 of 17 Tribes. I received estimates for other fish species from some

tribes. The Lummi Tribe, citing traditional concerns over any association of dollar estimates with C&S harvests, declined to furnish me with C&S harvest information. The quality of the estimates I received was variable, and ranged from information based on careful record keeping to "best judgements" where records were unavailable.

My protocol for data management was as follows.

1. Utilize C&S harvest volumes provided by 14 Tribes.
2. Where harvest was estimated in numbers of fish rather than pounds, use average fish sizes from that tribe or the most closely adjacent Tribe to convert to pounds harvested.
3. For the two tribes that did not provide C&S estimates for salmon, use "percent of commercial catch" conventions from closely adjacent tribes.
4. Apply shellfish and other fish prices from each tribe's commercial fishery to C&S harvest volume estimates.
5. Where no prices were available for a species for a tribe, use prices for that species from the most closely adjacent tribal commercial fishery.
6. Assume an elk yields 210 pounds of dressed meat at \$2.00/lb., and that a deer yields 52.5 pounds of dressed meat at \$2.00/lb..²⁴

²⁴ Developed from estimates provided by the Jamestown S'Klallam and Suquamish Tribes, respectively.

Resulting estimates of annual economic value associated with C&S harvests of the reporting Tribes are provided in Table 5. The per capita estimate is obtained by dividing total economic value associated with C&S harvest by the 1990 population total for the 16 reporting tribes.

Table 5

Annual Economic Value Associated with C&S Harvests
-16 Reporting Tribes-

<u>Species</u>	<u>Value in Dollars</u>
Salmon and steelhead	189,942
Shellfish	403,615
Other fish	166,590
Deer and elk	162,430
Total Economic Value	922,577
Annual Economic Value Per Capita	<u>\$71.31</u>

Taking into account both issues of data comprehensiveness and of quality, the information upon which these estimates are based likely covers the major species of C&S interest, but would benefit from further more rigorous specification. Inclusion of additional (less significant) species would be expected to increase the estimate provided in Table 5 slightly. Inclusion of Lummi data would also likely increase the all-tribes estimate provided. More careful recording of C&S catch could act to shift my estimate in either direction. In sum, and looking at the potential for high side adjustment, I judge that the estimate provided here could conceivably double - or under extreme assumptions, triple.

Adding this estimate of \$59.70 -or double or triple this amount- to the estimates for The Tribes in Table 3, I conclude that C&S harvests, while important to The Tribes in their own right, add little to the per capita income estimates provided there.

VII. Variation of Living Conditions Around the 1989/90 Basing Year

Most of my analysis has used data from 1989 and 1990, to take advantage of data from the 1990 national Census. In this section, I examine the extent to which conditions may have changed - both prior to and following those years.

1. Comparison with Tribal Living Circumstances Reported in the 1980 Census

I first compare data on poverty and on per capita income for The Tribes from the 1980 and 1990 Census, to determine what changes in living circumstances, if any, have occurred over the past decade. Comparative data on population sizes and poverty rates are only available from the 1980 Census for 12 of the tribes of interest here²⁵. Comparison of per capita income excluded another tribe from the 1980 reporting format²⁶. These exclusions were likely due to very small sample sub-sets for some Tribes, save for the Jamestown S'Klallam who had not been officially recognized at that time. In order to compensate for inflation, the estimate of Case Tribe per capita income developed from the 1990 Census was divided by 1.708, the ratio of increase in the U.S. Bureau of Labor Statistics Consumer Price Index between 1979 and 1989.

²⁵ Jamestown S'Klallam, Nooksack, Sauk Suiattle, Upper Skagit, and Stillaguamish were excluded.

²⁶ Nisqually.

Further, available Census publications only reported data for Americans Indians, Eskimos and Aleuts on or near reservations. Recalling previous discussion, these data will less clearly identify members of The Tribes only than the 1990 Special Run Census data used in my prior analysis.

With these qualifications, the results of my 12 tribe poverty comparison and 11 tribe per capita income comparison are presented in Table 6.

Table 6

Comparative Living Circumstances for The Tribes
-1979 and 1989-

<u>Estimate of Living Circumstances</u>	<u>1979</u>	<u>1989</u>
Percent of Persons Below the Poverty Line.	30.58%	32.68%
Per Capita Income (in 1979 dollars).	\$3,591	\$4,033

Sources: Bureau of the Census, General Social and Economic Characteristics: Washington. PC80-1-C49, Table 193.
 : Bureau of the Census, American Indians, Eskimos and Aleuts on Identified Reservations and in the Historic Areas of Oklahoma (Excluding Urbanized Areas). PC80-2-1D, Tables 1 & 10.
 : Bureau of the Census, 1990 Census of Population and Housing: Summary Social, Economic, and Housing Characteristics, Washington. 1990 CPH-5-49, Table 17.
 : Bureau of the Census, Statistical Abstract of the United States, 1992. No. 738.

I conclude that there appears to have been some modest increase in Tribal per capita income between 1979 and 1989, but that this improvement occurred at such low levels that it had no discernable impact on percent of Tribal persons living in poverty.

2. Altered Tribal Circumstances Subsequent to 1989/90.

a. Increased Tribal Earnings

It was beyond the capability of time and resources available to this analysis to conduct a complete update of Case Tribe per capita income subsequent to the 1989/90 Census reporting period. What I have done is look for wage and salary impacts for major Tribal economic activity sectors that would have grown, on the one hand, or declined on the other. The data upon which this analysis is based has been taken, in part, from Tribal responses to State Interrogatories, and is in part based on direct written and oral communications with Tribal representatives.

Six Tribes have opened gaming facilities (bingo or casino) since 1989, and one Tribe's bingo facility has grown significantly. One Tribe has also recently opened a marina. Working directly from Tribal data, I estimate that these facilities have increased wages and salaries to Tribal members by \$16,534,000. To some degree, this increment may have substituted for other prior economic activity. However, considering the full amount as an increment, I calculate that it would have resulted in an addition of \$945 per capita for The Tribes.²⁷

b. Decreased Tribal Earnings

Almost all Tribal fisheries officials I spoke with reported decreased fishery earnings in 1991 and 1992 - particularly for salmon. Fish catches and prices do tend to fluctuate, year to year

²⁷ Based on an estimated current enrollment population of 17,341 members.

- although longer term pressures upon salmon habitat and from fish farming (primarily in Europe) are causes for continuing concern. My procedure here was to average all-species commercial catch revenues for The Tribes from 1990 (a relatively good year), 1991 and 1992, and then compare this average revenue with that for 1989. These calculations are based on catches reported by each Tribe. Where necessary, average fish sizes for that Tribe or for an adjacent Tribe were used to convert from numbers to pounds caught. Similarly, prices for the reporting Tribe or for an adjacent Tribe were used to convert from catch volume to value, where revenues were not directly reported.

The above calculations estimate that gross revenues from commercial fishing by The Tribes have been lower by an average of \$4,780,000 for each of the three years subsequent to 1989. Again dividing by our most recent population estimate for the Case Tribes of 17,496, this results in an equivalent per capita decline of \$273.22 for The Tribes.

c. Changes in Income Since 1989 - A Summary

As noted, my assessment of income changes for The Tribes subsequent to 1989 is not comprehensive. However, analysis focusing on events in major economic sectors suggests a net improvement of approximately \$672 per capita. Such improvement is important, but continues to leave members of the Case Tribes with material living conditions that are substantially below those of general residents living in Washington or in the United States.

VIII. Estimated Revenue Impact of a 50% Allocation of Shellfish to The Tribes

To develop an estimate of impact from allocation of 50% of shellfish harvests in Puget Sound and the Strait of Juan de Fuca easterly of Cape Flattery to The Tribes, I first identify the 1989 catch revenue from commercial crab and other shellfish harvests in Washington²⁸. I then estimate the proportion of these harvests caught in Puget Sound and the Strait of Juan de Fuca, using catch volumes reported for geographic sub-areas²⁹. I multiply pounds of personal-use oysters caught in Hood Canal in 1986³⁰ by the 1989 commercial price³¹. Similarly, I multiply the personal-use harvest of hardshell clams in Juan de Fuca Straits and Puget Sound waters in 1986³² by the 1989 commercial price³³. I sum these estimates and then subtract the estimate of 1989 commercial shellfish harvest provided by the Tribes. These calculations are outlined in Table 7.

²⁸ Washington Department of Fisheries, 1990 Fisheries Statistical Report.

²⁹ Supra at 62-66.

³⁰ Washington State Department of Fisheries, Washington State Sport Catch Report, 1989. This is the last year I have been able to find that gives both oyster and hardshell clam sport catch estimates.

³¹ See Note 39.

³² See Note 40.

³³ See Note 41.

Table 7

Estimated Economic Impact of Tribal Harvest of 50% of the
Shellfish Resources of Puget Sound and the Strait of Juan de Fuca

	<u>Impact in Dollars</u>
Estimated Washington commercial harvest	62,176,000
Estimated Puget Sound/Juan de Fuca Share	23,336,000
Commercial equivalent value of Sport Harvest	2,716,000
Total Annual Commercial and Sport Value	26,052,000
1989 C&S Tribal Shellfish Harvest (Table 5)	404,000
Total Puget Sound/ Strait of Juan de Fuca Commercial, Sport and C&S Harvest	26,456,000
50% Tribal Share	13,228,000
1989 Estimated Tribal Commercial + C&S Harvest	1,588,000
Revenue Added Value from 50% Tribal Share	11,640,000
Per Capita Tribal Value Added	<u>\$731</u>

I conclude that allocation of 50% of shellfish harvests in Puget Sound and the Strait of Juan de Fuca to The Tribes would improve Tribal material wellbeing, but would not, by itself, erase per capita income deficits faced by The Tribes.

**IX. Relation of Shellfish, Other Fish and Wild Game Harvests of
The Tribes to Total Per Capita Income**

In Table 8, I contrast the sum of per capita gross revenue from 1989 commercial fish and shellfish harvests, C&S values from Table 5 and the added benefits from a 50 percent Tribal share of Puget Sound/Juan de Fuca shellfish estimated in Table 7, with 1989 per capita income for The Tribes from Table 3. Development of commercial catch revenue data has been previously discussed in

Section VII.2.b. This estimate indicates the level of per capita income for the Tribes if they relied solely on shellfish, other fish and wild game.

Table 8

Contrast Between Actual and Potential Fishery Income and Total
Per Capital Income for The Tribes - 1989

	<u>Per Capita Income</u> --in dollars--
Total Income - Census Based	6,914
Total Income - Enrollment Based	7,169
Gross Commercial Fishing Revenue (shellfish and other fish)	1,343
Estimated Gross Fishing and Hunting Income Inclusive of C&S Harvests	<u>1,414</u>
Income from 50% Share of Shellfish Harvest (Table 7)	731
Total Present and Potential Income from Shellfish, Other Fish & Game	<u>\$2,145</u>

APPENDICES

APPENDIX A

Data From the Bureau of Census 1990 Special Run for 17 Tribes

<u>Tribe</u>	<u>Census Sample</u>		<u>In Poverty</u>			<u>Unemployed</u>			<u>Per Capita Income(\$)</u>
	<u>Pop.</u>	<u>Size</u>	<u>Yes</u>	<u>No</u>	<u>%</u>	<u>Yes</u>	<u>No</u>	<u>%</u>	
Jamestown	185	21	--	112	0.0	--	53	0.0	14,376
Lower Elwha	251	82	76	141	35.0	27	50	35.1	5,067
Port Gamble	361	164	150	301	33.3	34	153	18.2	5,819
Lummi	2956	818	1062	1969	35.0	201	885	18.5	5,989
Nooksack	840	191	311	576	35.1	69	297	18.8	9,182
Muckleshoot	985	280	392	580	40.3	41	255	13.8	3,708
Nisqually	447	127	131	291	31.0	49	136	26.5	7,113
Puyallup	1281	229	307	696	30.6	50	392	11.3	9,815
Sauk Suitttle	160	42	84	59	58.7	22	30	42.3	9,052
Upper Skagit	521	116	144	262	35.5	29	155	15.8	8,203
Squaxin Is.	435	126	80	389	17.1	47	184	20.4	8,760
Stillaguamish	123	33	60	58	50.8	9	32	22.0	4,981
Suquamish	726	154	192	410	31.9	27	185	12.8	7,536
Swinomish	717	168	316	366	46.3	48	277	14.8	9,842
Tulalip	1929	601	444	1686	20.8	63	682	8.5	7,141
Makah	1597	493	540	1058	33.8	106	565	15.8	6,227
Skokomish	714	238	312	423	42.4	57	228	20.0	6,964
All Tribes	14228	3883	4601	9377	32.9	879	4559	16.2	6,914

*Numeric data on poverty and employment reflect expansion of Census sample data to estimated population size for each Tribe.

APPENDIX B

Estimates of Tribal Population Based on Enrollment Records

<u>Tribe</u>	<u>1990 Population</u>	<u>Present Population</u>
Jamestown	244	222
Lower Elwha	499	588
Port Gamble	714	800
Lummi	2,989	3,164
Nooksack	1,302	1,261
Muckleshoot	953	1,146
Nisqually	350	394
Puyallup	1,868	1,741
Sauk Suiattle	220	209
Upper Skagit	511	565
Squaxin Island	421	430
Stillaguamish	185	200
Suquamish	649	727
Swinomish	490	548
Tulalip	2,231	2,600
Makah	1,649	2,211
Skokomish	651	690
All Tribes	<u>15,926</u>	<u>17,496</u>

*These data are actual enrollment counts. The dates when counts were taken vary by Tribe.

APPENDIX C

Income Calculation - Jamestown S'Klallam Tribe

<u>Household Income Class</u> \$	<u>Income Mid-Point</u> \$	<u>Number of Households</u>	<u>Total Income for Each Income Class</u> \$
Under 2000	1000	5	5,000
2001-5000	3500	9	31,500
5001-7000	6000	5	30,000
7001-10000	8500	11	93,500
10001-13000	11500	8	92,000
13001-16000	14500	11	159,500
16001-20000	18000	9	162,000
20001-30000	25000	18	450,000
30001-40000	35000	8	280,000
40001-50000	45000	9	405,000
50001-60000	55000	1	55,000
60001+	70000	5	350,000
Total-All Classes		<u>99</u>	<u>2,113,500</u>
Estimated Average Income per Household			\$21,348
Estimated Per Capita Income (at 2.5299 persons/hshld)			<u>\$8,438.28</u>

Source: Vance, J. Memorandum to Philip Meyer. Jamestown
S'Klallam Tribe, June 7, 1993.